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PRELIMINARY SYNOPSIS OF THE AMERICAN BEARS.

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Heretofore it has been customary to class the North American bears in three groups—Blacks, Grizzlies, and the Polar bear. The study of a series of more than 200 skulls, including about 35 skulls of the huge bears of the Alaska coast region, shows this classification to be inadequate and adds four strongly marked species to our fauna. The new species are: (1) the gigantic fish-eating bear of Kadiak Island and the Alaska Peninsula, *Ursus middendorffi* nob.; (2) the large brown bear of Yakutat Bay and the coastal slope of the St. Elias Alps, *Ursus dalli* nob.; (3) the large brown bear of Sitka and the neighboring islands (and perhaps the adjacent mainland also), *Ursus sitkensis* nob.; and (4) the Florida Black bear, *Ursus floridanus* nob.

In view of the remarkable characters presented by these new forms it becomes necessary to rearrange our bears. They may be classed in five well marked superspecific groups or types, as follows:

1. The Polar bear type, genus *Thalarchos* Gray.
2. The Black bear type, subgenus *Euarctos* Gray.
3. The Grizzly bear type, *Ursus horribilis* and its allies, subgenus *Danis* Gray.
4. The Sitka bear type, *Ursus sitkensis* nob. and *U. dalli* nob.
5. The Kadiak or Alaska Peninsula bear, *Ursus middendorffi* nob.

The five groups are unequally related: the Polar bear belongs to an independent genus; the Black bears are more different from the others, taken collectively, than the latter are from one

another, and seem to be the only ones whose distinctive characters are of sufficient weight to entitle them to subgeneric recognition.

1. The Polar or Ice bear, *Thalarctos maritimus* (Linn.), inhabits the Arctic shores and islands of both continents and has not been subdivided.

2. The Black bears may be separated into at least 4 species having more or less circumscribed geographic ranges: (a) the common Black bear, *Ursus americanus* Pallas; (b) the Louisiana bear, *Ursus luteolus* Griffith; (c) the Florida bear, *Ursus floridanus* nob.; and (d) the St. Elias bear, *Ursus emmonsii* Dall. Some of these may be found to intergrade, and *Ursus americanus* may be still further split into subspecies. *Ursus emmonsii*, recently described by Dr. Dall as a 'variety' of *americanus*,* I have not seen. From the description it appears to be a distinct species.

3. The Grizzly bears (including the Barren Ground bear) may be separated into 4 more or less well-marked forms, as follows: (a) the true Grizzly, *Ursus horribilis* Ord, from the northern Rocky Mountains; (b) the Sonoran Grizzly, 'var. *horriæus*' Baird, probably only a subspecies; (c) the Norton Sound, Alaska, Grizzly, probably another subspecies; (d) the very distinct Barren Ground bear, *Ursus richardsoni* Mayne Reid. Whether or not the large Grizzly from southern California deserves subspecific separation from the Sonoran animal (*horriæus*) has not been determined.

4. The Sitka bear, *Ursus sitkensis* nob., and the allied Yakutat bear, *Ursus dalli* nob., are the representatives of a very distinct type. They resemble the Grizzlies in the flatness of their skulls, but are much larger, are different in color, have more curved foreclaws, and the Sitka bear has a different type of sectorial tooth. The Yakutat bear is much larger than the Sitka bear and has very different teeth. It may represent an independent section.

5. The Kadiak and Alaska Peninsula bear, *Ursus middendorffi* nob., is the largest of living bears and differs markedly from all other American species. It closely resembles the Great Brown bear of Kamschatka, *Ursus beringiana* Middendorff,† which it only slightly exceeds in size. The extraordinary elevation and narrowness of the forehead suffice to distinguish this bear from all other known species (Pl. IV, fig. 2).

The number of full species of North American bears here recog-

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†*Ursus beringiana* Middendorff, 1851 = *Ursus piscator* Pucheran, 1855. Both are from Kamschatka.

nized is ten: 4 of the Black Bear group; 2 of the Grizzly group; 3 of the big Brown bears of Alaska, and the Polar bear.

In addition to the splendid series of skulls of big bears in our National Collection and those in my private collection, I have been fortunate in having a number of others loaned me for study. For these I am indebted to the courtesy of Mr. Archibald Rogers, of Hyde Park, N. Y., Mr. W. Hallett Phillips, of Washington, D. C., and Mr. John Fannin, Curator of the Provincial Museum at Victoria, British Columbia. I wish further to express my appreciation of the efforts of Mr. Charles H. Townsend and Mr. J. Stanley-Brown, and also of Mr. Rudolph Neumann, of the Alaska Commercial Company, in securing skulls of big bears from various points in Alaska.

The present paper, which is intended merely as a preliminary announcement of results, to be followed later by a more comprehensive treatise on our bears, is based almost wholly on a study of skulls and teeth. Much additional material is desired, particularly from northern British Columbia and the coast region of Alaska south of the Alaska peninsula.

The external characters—color, length and curvature of claws, length of tail and ears, proportions of feet, and so on—are doubtless of great importance and probably afford many excellent landmarks in differentiating the several species, but unfortunately no series of skins is available for comparison. No museum in the world contains such a series, and any person who will aid in collecting and preserving the necessary material will advance the science of mammalogy. It is known in a general way that the Grizzlies have longer and straighter claws than the big Brown bears of Alaska, and that the animals differ materially in color, but the nature and extent of these differences are unknown.

The Bears present a surprisingly wide range of individual variation in cranial and dental characters, and the sexes differ greatly in size, the males being much the larger and possessing heavier teeth. The material at my command comprises upwards of 200 skulls, covering all known and several previously unrecognized North American species, and has the rare advantage of containing large series from single localities, one such series consisting of no less than 95 skulls. These series show that, in addition to sexual variation and the changes in form and size resulting from difference in age, there is a large range of individual variation in the size, shape, and proportions of the cranium and teeth. They show also that this variation, great as it is, has

definite limits beyond which it does not pass, and that excellent and constant characters exist by which the several species and subspecies may be recognized.

Sexual difference in size is most conspicuous in the Grizzlies, though it is marked in the Black bears also. In the latter the disproportion is greater in the teeth than in the skull; in the female the molar teeth are much smaller, narrower, and less massive than in the male.

Individual variation in the teeth is the rule, and the amount of this variation is surprising, affecting the number and relations of the accessory cusps, and also the form and proportions of the fourth upper and lower premolars, and the great posterior 'heel' of the last upper molar.

As is well known, the bears normally have 42 teeth, the dental formula being $i \frac{3}{3}$, $c \frac{1}{1}$, $pm \frac{4}{4}$, $m \frac{2}{3} = \frac{20}{22} = 42$. The first three premolars above and below, however, are small and nearly functionless, and several of them usually fall out before the animal attains maturity, so that adult skulls rarely contain more than 36 or 38 teeth.



FIG. 6.—Lower carnassial tooth (m_1) and last premolar.

1. Black bear (*Ursus americanus*).
2. Sitka bear (*Ursus sitkensis*).
3. Grizzly bear (*Ursus horribilis*).

In the Grizzlies, Barren Ground, Yakutat, and Kadiak bears the first lower molar (m_1) has one or more cusps or tubercles on the inner side between the middle and posterior cusps (fig. 6,³), no trace of which exists in the Black bears (fig. 6,¹). These intermediary cusps are absent also in the Sitka bear (fig. 6,²). In the Grizzlies and their allies the posterior cusps (inner and outer) are nearly opposite; in the Blacks they are more oblique.

Examination of the molar teeth in several hundred bear skulls shows beyond question not only that the last upper molar decreases in size markedly (and probably rapidly) after the wearing down of the crown has passed a certain plane, but also that the length of the molariform series as a whole in both jaws shortens materially. No gaps are left between the teeth, the wear being compensated by a movement from behind forward which keeps the crowns continually in contact.

KEY TO THE BIG BEARS OF AMERICA.

Molars small and weak; pm⁴ with inner cusp obsolete or small; m² without decided heel genus *THALARCTOS*.

Color, white *Thalarctos maritimus*.

Molars large and powerful; pm⁴ with inner cusp strongly developed; m² with enormous heel genus *URSUS*.

Size huge.

Size largest (skull reaching 440 mm. in greatest length); frontal region enormously elevated above and behind orbits *Ursus middendorffi*.

Size somewhat smaller (skull less than 425 in greatest length); frontal region nearly flat.

pm⁴ very large and quadrituberculate; pm₄ large and high without heel; m₁ without clear interspace on inner side *Ursus dalli*.

pm⁴ normal; pm₄ moderate, normally with cusp on cingulum in front of main cusp; m₁ with clear interspace on inner side *Ursus sitkensis*.

Size medium or relatively small.

Temporal impressions turning in abruptly from postorbital processes, nearly at right angle to cranial axis; skull short *Ursus richardsoni*.

Temporal impressions not turning in abruptly from postorbital processes; skull longer.

Frontal elevated and usually convex between postorbital processes *Ursus horribilis*.

Frontal flattened and concave between postorbital processes *Ursus horriæus*.

***Ursus middendorffi* sp. nov.** Kadiak Bear.

Pl. IV, figs. 2, 3; pl. V, fig. 2; pl. VI, fig. 2.

Type from Kadiak Island, Alaska, No. 54793, ♂ ad., U. S. Nat. Mus., Dept. Agric. coll. Collected July 3, 1893, by B. J. Bretherton. (Original No. 176.)

Characters.—Size huge; largest of living bears, though only slightly larger than *Ursus beringiana* Middendorff, from Kamschatka; frontal region in male enormously elevated, highly arched, and relatively narrow; zygomata bowed outward to an extraordinary degree; postzygomatic part of skull very short.

The bear of Kadiak Island needs comparison with only a single species—*Ursus beringiana*, of Kamschatka. It requires no comparison with the American Grizzlies (*Ursus horribilis* Ord) or with the Barren Ground bear (*Ursus richardsoni* Mayne Reid). Contrasted with the Kamschatka bear the forehead of the male is very much higher, more swollen above and behind the postorbital processes, narrower, and more rounded;

the zygomatic arches are more strongly bowed outward and their posterior roots stand out at nearly a right angle to the cranial axis; the



FIG. 7. - Kadiak Bear.
Ursus middendorffi.

interpterygoid fossa is longer; the ascending arms of the premaxillæ are shorter; the jugal is more extended anteriorly, reaching up in front of the lachrymal foramen [in *beringiana* it falls considerably short of this foramen]. The audital bullæ differ strongly in young skulls of the two species, though they come to resemble one another more in old age. In the young of the Kadiak animal they are very much heavier, more convex inferiorly, and broader at the outer or meatus end. In the adult female the skull is

relatively more elongated than in the male, and the frontal region is less elevated.

The first upper and last lower molars (particularly the latter) are decidedly smaller in the Kadiak animal, while the middle lower molar is nearly the same size in both species. The lower carnassial has strong intermediary cusps or tubercles, as in the Grizzlies.

Measurements of skull of type.—Greatest length of cranium (front of premaxillary to end of occipital crest), 440; greatest basal length (gnathion to occipital condyles), 392; basal length (gnathion to basion), 377; basilar length of Hensel, 370; zygomatic breadth, 277; occipito-sphenoid length (basion to suture between basi- and presphenoid), 105; postpalatal length, 167; basion to plane of front of last upper molar, 238; interorbital breadth, 98; distance between postorbital processes, 132.5; occipito-nasal length, 358; height of brain case above pterygoid, 160; height of brain case above basisphenoid, 123.

Remarks.—Compared with *Ursus beringiana*.* skulls of adult *U. middendorffi* can be distinguished at a glance by the difference in the breadth of the frontal and the degree of elevation of the supraorbital region. Skulls of any age may be distinguished by the peculiarity of the anterior end of the jugal, which in the Kadiak animal reaches upward to articulate with the lachrymal,

* *Ursus arctos* var. *beringiana* Middendorff, Untersuchungen an Schädeln des gemeinen Landbären, p. 74, 1851.

and also by the smaller size of the first upper and last lower molars. The difference in the posterior ending of the ascending arm of the premaxilla also furnishes a good average character. In the Kadiak bear the premaxillæ rarely reach more than half way up the vertical height of the orbit, while in the Kamschatka animal they usually reach considerably more than half way. The shape of the zygomatic arch as seen from the side differs in the two. In the Kadiak bear it is more highly arched and broader, especially posteriorly. The difference is more marked in the young than in adults.

The claws of the fore feet of *Ursus middendorffi* are long and rather strongly decurved on the distal third. Those of the Grizzly (*Ursus horribilis*) are still longer and much straighter. The longest claw of an old male *middendorffi* killed at Kadiak Island, June 18, 1894, and measured for me by Mr. B. J. Brether-ton, measured over the convexity of the claw 96 mm., while the distance in a straight line from base to tip on the underside was only 74 mm.

I have named this bear in honor of the celebrated Russian naturalist, Dr. A. Th. von Middendorff, in recognition of his early struggles with the large bears of the shores of Bering Sea. Middendorff named the big bear of Kamschatka *Ursus beringiana*,* and stated that he was particularly struck with a skull from Kadiak which was distinguished by its superior size. It seems fit that the great Kadiak bear, proving distinct from the Kamschatka animal, should perpetuate Middendorff's name. I have examined 16 skulls of this bear.

***Ursus dalli* sp. nov. Yakutat Bear.**

Pl. V, fig. 1; pl. VI, fig. 5.

Type from Yakutat Bay, Alaska, No. 75048, ♂ old, U. S. Nat. Museum, Dept. Agriculture coll. Collected Sept. 8, 1895, by the chief of the Yakutat Indians. (Procured through Albin Johnson. Original No. 2.)

Characters.—Size huge, only slightly less than the Kadiak bear; skull long and massive; frontals rather flat and only slightly elevated above orbits; postorbital processes strongly developed and decurved in old age; paroccipital processes very large and heavy, but relatively short. Molariform teeth large and heavy; pm⁴ extraordinarily large and high, nearly as broad as long, quadrituberculate (an accessory cusp on inner side in front of postero-internal cusp); m₁ much as in the Grizzlies, the inter-

**Ursus arctos* var. *beringiana* Middendorff, Untersuchungen an Schädeln des gemeinen Landbären, p. 74, 1851.

space between anterior and posterior parts of tooth on inner side filled by one or more cusplets; m^2 large and broad, with heel elongate and broadly rounded posteriorly in male; shorter and more obliquely truncated in

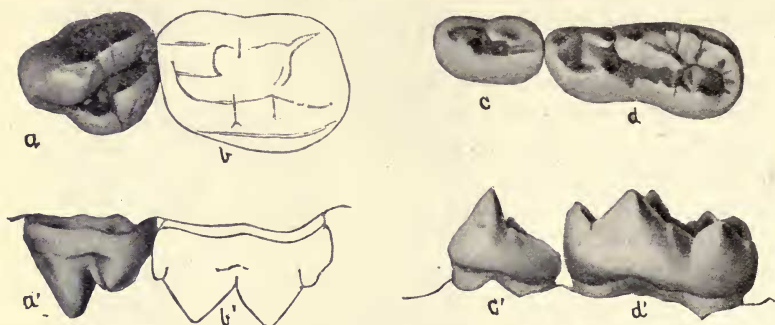


FIG. 8.—Teeth of Yakutat Bear (*Ursus dalli*), natural size.

a. Last upper premolar.

c. Last lower premolar.

b. First upper molar.

d. First lower molar.

female; pm_4 large and high, without distinct heel, the main cusp occupying nearly the whole crown of the tooth; a strongly developed peg-like accessory cusp usually present on inner side of main cusp a little behind the middle.

Measurements of skull of type.—Greatest length of cranium (front of premaxillary to end of occipital crest), 424; greatest basal length (gnathion to occipital condyles), 400; basal length (gnathion to basion), 366; basilar length of Hensel, 360; zygomatic breadth, 269; occipito-sphenoid length (basion to suture between basi- and presphenoid), 107; postpalatal length, 172; basion to plane of front of last upper molar, 242; interorbital breadth, 92; distance between postorbital processes, 134; occipito-nasal length, 360; height of brain case above pterygoid, 148; height of brain-case above basisphenoid, 117.



FIG. 9.—Yakutat Bear (*Ursus dalli*).

Remarks.—The Yakutat bear is almost as large as the Great bear of Kadiak and the Alaska peninsula. In fact the total length of the skull from the occipital condyles to front of in-

cisors and the length of the top of the skull (occipito-nasal length) are both slightly greater in *Ursus dalli*. Adult skulls may be distinguished at a glance by the general form, the frontal region of *dalli* being flattened, while that of *middendorffi* is highly arched, and young skulls by the dental characters above mentioned. I have examined five skulls from Yakutat bay.

It gives me pleasure to name this splendid bear in honor of Dr. Wm. H. Dall, whose name must ever be associated with the natural history of Alaska.

***Ursus sitkensis* sp. nov.** Sitka Bear.

Pl. IV, Fig. 1; pl. V, fig. 3.

Type from coast near Sitka, Alaska, No. 6543, Merriam coll. Collected by an Indian; purchased at Sitka and presented to me by Mr. J. Stanley-Brown.

Characters.—Size large, but smaller than *Ursus dalli*; claws long; skull long and heavy, similar to that of *dalli*, but less massive; frontals flat; postorbital processes well developed, but shorter and less decurved than in *dalli*; paroccipital processes much longer and more slender than in *dalli*; incisors, canines, and last premolar large; molars relatively small; pm⁴ normal (trituberculate) and very much longer than broad; m₁ with an open interspace on inner side between anterior and posterior cusps (fig. 6²), much as in subgenus *Euarctos*, thus differing widely from all other big bears of America; m² decidedly smaller than in *dalli*; pm₄ with normally a distinct and rather large cusp on cingulum in front and slightly on inner side of main cusp.

Measurements of skull of type.—Greatest length of cranium (front of premaxillary to end of occipital crest), 395; greatest basal length (gnathion to occipital condyles), 345; basal length (gnathion to basion), 329; basilar length of Hensel, 322; zygomatic breadth, 243; occipito-sphenoid length (basion to suture between basi- and presphenoid), 73; postpalatal length, 129; basion to plane of front of last upper molar, 211; interorbital breadth, 85; distance between postorbital processes, 123; occipito-nasal length, 340; height of brain case above pterygoids, 140; height of brain case above basisphenoid, 105.

Remarks.—The Sitka bear resembles the Yakutat bear in general appearance, but is decidedly smaller and differs widely in dental characters. It lacks the excessive development of the last upper premolar which characterizes *Ursus dalli*, and the first lower molar is unique among the large bears, lacking the tubercles that are present in all the others between the anterior and posterior parts of the tooth. In this respect the tooth approaches, though it does not really resemble, that of the Black bears.

A skull purchased from an Indian at Sitka in 1889 by Mr. Charles H. Townsend differs from the other Sitka skulls. It is larger and longer and has decidedly smaller molar teeth. The exact locality where this bear was killed is uncertain, but Mr. Townsend was told that it came from the mainland a little north of Sitka. I have examined 7 skulls of the Sitka bear.

***Ursus horribilis* Ord. Grizzly Bear.**

Pl. IV, fig. 4; pl. V, fig. 4; pl. VI, fig. 1.

Ursus horribilis Ord, Guthrie's Geography, 2d Am. edition, vol. II, pp. 291, 299-300, 1815. [Rhoads' reprint, 1894.] Based on the Grizzly bear of Lewis and Clarke.

Type locality.—Montana.

Geographic distribution.—Northern Rocky Mountains from Wyoming and northern Utah northward; also whole of interior British Columbia and thence northwestward in the interior to Norton Sound, Alaska.

Characters.—Size large (larger than *Ursus richardsoni*, but smaller than any of the Alaska bears); fore claws nearly straight, larger than in any

other species, and whitish; hairs elongated over the shoulders, giving almost the effect of a 'hump'; skull and teeth large and massive; frontal region elevated above orbits and highest behind postorbital processes; temporal impressions strongly curved, usually meeting over hinder end



FIG. 10.—Grizzly Bear (*Ursus horribilis*).
From Wyoming.

of frontals, and not elevated anteriorly to form ridges. Looked at from in front the frontals are normally elevated and convex between the postorbital processes, hiding the sagittal crest (fig. 12), while in the California and Sonora Grizzlies this part of the skull is flattened and depressed, and the temporal ridges and beginning of the sagittal crest may be seen (figs. 11 and 15).

Remarks.—The Norton Sound, Alaska, Grizzly, compared with true *Ursus horribilis* from the Rocky Mountains, differs slightly in cranial and dental characters and will probably merit sub-specific separation as *Ursus horribilis alascensis*. It is somewhat larger, the frontal region is furrowed antero-posteriorly between the orbits, the palate averages longer, and the blade of the coronoïd process of the mandible is narrower; the first lower molar is broader posteriorly and is much more abruptly and deeply

narrowed on the outer side immediately in front of the posterior cusp. Except in a single skull (an old male from the Shaktolik River, No. 76470), the combined length of the basioccipital and basisphenoid along the median line is decidedly less than half the length of the palate. In the Rocky Mountain Grizzly the occipito-sphenoid length is decidedly greater than half the length of the palate.

***Ursus horribilis horriæus* Baird.** Sonora Grizzly.

Pl. IV, fig. 5; pl. V, fig. 6; pl. VI, fig. 4.

Ursus horribilis var. *horriæus* Baird, Rept. Mexican Boundary Survey, II, Mammals, pp. 24-29, 1859.

Type locality.—Coppermines, southwestern New Mexico.

Geographic distribution.—Southern Rocky Mountains and outlying peaks and ranges in Colorado, New Mexico, Arizona (and probably southern Utah), northern Mexico, and southern California. The type locality is the old Coppermines, near the Rio Mimbres, in Grant Co., New Mex.



FIG. 11.—Sonora Grizzly from the Coppermines, New Mexico. Baird's type.



FIG. 12.—Rocky Mountain Grizzly from Wyoming.

Characters.—Size large; skull and teeth large and massive; frontal region not elevated above or behind orbits, highest at, and flattened and concave between, postorbital processes; temporal impressions straight or nearly straight, meeting considerably anterior to hinder end of frontals, and elevated anteriorly to form well-defined ridges or crests (Pl. 6, fig. 4).

Remarks.—Professor Baird in his original description of *horriæus* had three specimens—an adult skin and skull from Nogales, Sonora, and both adult and young skulls from the Coppermines, New Mexico. The adult from the latter locality (No. 990) is here chosen as the type because it is the one used by Baird in his comparisons, and the only one of which he gave a

table of measurements. The Nogales skull is higher with reference to its length and differs in other particulars, as shown in the accompanying illustrations (figs. 13 and 14).



FIG. 13.—Baird's type of *horriæus* from the Coppermines, New Mexico.

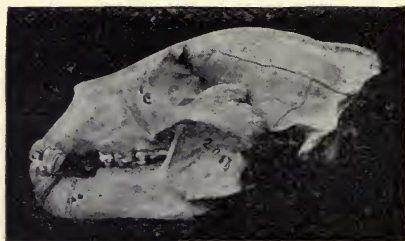


FIG. 14.—Baird's Nogales specimen.

The huge Grizzly of southern California, which unfortunately is rapidly approaching extinction, differs in some respects from



FIG. 15.—California Grizzly from Monterey.

the typical Sonora Grizzly and may be entitled to stand as subspecies *californicus*. It is larger, the skull averages longer, and the teeth are of greater size. I have not been able to compare skins of the two forms, but Prof. Baird states that there are color differences; that the Sonora animal lacks the stripes of the California bear, and that the ears

and tail are both short and essentially of the same length, while in the California bear the

ears are twice as long as the tail. The average basilar length of six skulls from Monterey and old Fort Tejon, California, is 336 mm., while the average of two adult males from New Mexico is only 310. The average of four adult male *horribilis* from the northern Rocky Mountains is 316 mm. But the numbers here averaged are too small to afford reliable results.

Ursus richardsoni Mayne Reid. Barren Ground Bear.

Pl. IV, fig. 6; pl. V, fig. 5; pl. VI, fig. 3.

Ursus richardsonii Mayne Reid, Bruin: The Grand Bear Hunt. London, 1860. Am. ed., pp. 260-261, 1864.

Type locality.—Great Slave Lake, Arctic America.

Geographic distribution.—Barren grounds between Hudson Bay and the Mackenzie River.

Characters.—Size smallest of the American big bears; skull short; zygomata broadly spreading; temporal ridges conspicuous and turning abruptly inward from postorbital processes (fig. 17); teeth large and broad. Adult skulls of the Barren Ground bear may be known from all other species by the form of the frontal shield, which is truncated posteriorly by the temporal crests (figs. 16 and 17). The temporal crests, beginning on the posterior edge of the largely developed postorbital processes, run toward the median line, forming



FIG. 16.



FIG. 17.

Barren Ground Bear (*Ursus richardsoni*), showing high sagittal crest and abruptly spreading temporal ridges.

nearly a right angle with the cranial axis, as shown in the accompanying illustrations. The postorbital processes are long and peg-like and flattened on top. The sagittal crest is correspondingly elongated, reaching forward beyond the middle of the frontals and measuring more than half as much as the upper surface of the skull. The muzzle is short and

slightly upturned, giving the animal a 'pug-nosed' appearance (pl. V, fig. 5). Contrasted with the Grizzlies, the skull as a whole is much shorter and relatively broader, the ratio of zygomatic breadth to basilar length being very much greater. The shortening is chiefly in the brain case, bringing the broad posterior part of the zygomatic arches much nearer the hinder end of the skull. The skull of the young animal is flat on top; that of the adult rises abruptly at the orbits and is convex over the brain case. The angular process of the mandible curves strongly upward at the tip, so that the notch is nearly a complete circle; it is more open in the other bears.

The dentition is distinctly of the Grizzly type. The molars are as large as in the Grizzly. The fourth upper premolar is large and high and has a strong single internal cusp, without accessory cusps in the specimens examined. The fourth lower premolar lacks the antero-internal cusplet of the Grizzlies, and the main cusp slopes back to the posterior margin, where it is rounded off without developing a posterior cusplet. The last upper molar has the inner tubercles flatter than in the Grizzly.

Remarks.—The Barren Ground bear is an excellent species, differing widely from its nearest relative and neighbor, the Grizzly of Alaska, which latter animal is represented in the collection by a number of skulls from the Norton Sound region. All the skulls of the Barren Ground bear I have examined are from the region north of Great Bear Lake, and were collected by R. McFarlane. They are labeled as coming from Anderson River, Franklin Bay, and 'Arctic coast.' Whether the species ranges west of the Mackenzie River I have been unable to ascertain.

The Black Bears. Subgenus *Euarctos* Gray.

The subgenus *Euarctos*, proposed by Gray in 1864* for the common Black bear of North America (*Ursus americanus* Pallas), is well worthy of recognition. It was characterized as follows: "Fur short, uniform. Front claws moderate, not much longer than the hind ones. Hind feet short. Upper tubercular moderately long, narrowed behind."

In addition to the peculiarities pointed out by Gray, it differs constantly in several excellent dental characters from the large Brown and Grizzly bears of America, and also from *Ursus arctos* Linnaeus, of Scandinavia, which is the type of the genus *Ursus*. The most important character, and one which alone is sufficient to warrant the establishment of the subgenus, is the form of the lower carnassial tooth (m_1). This tooth has a broad, open, flat space or step on the inner side between the middle and posterior cusps (metaconid and entoconid), which is never present in the Brown and Grizzly bears (fig. 6). In the restricted genus *Ursus* the metaconid and entoconid are joined together, and the notch between is

* Proc. Zoöl. Soc. Lond., 692, 1864.

occupied by one or more accessory cusps. The posterior cusps of the talon (hypoconid and entoconid) are nearly opposite in the Grizzlies and very oblique in the Black bears. The Black bears agree further among themselves and differ from the Grizzlies in the last lower premolar (pm_4), which lacks the accessory cusps on the inner side, lacks the median sulcus behind and the inner limiting ridge, and is uniformly much smaller; in the last upper premolar (pm_4), which lacks all traces of the posterior accessory cusp; in the shape of the last upper molar (m^2), which is considerably broadest in the middle and is cut away posteriorly on the outer side, with the heel shorter than in the Grizzlies. In *Euarcos* the coronoid process of the mandible rises at nearly a right angle from the horizontal ramus; in *Ursus* proper by a gradual slope.

***Ursus americanus* Pallas. Black Bear.**

Ursus americanus Pallas, Spicilegia Zoologica, fasc. XIV, pp. 5-7, 1780.

Type locality.—Eastern North America.

Geographic distribution.—Forest-covered parts of North America north of the Lower Austral zone.

Characters.—Size small; frontal region usually moderately elevated; zygomata spreading; molar teeth small.

The characters of the subgenus suffice to distinguish *Ursus americanus* from all other American bears except *luteolus* and *floridanus*. From these it differs in the shortness of the skull as a whole, in the smaller size of the molar teeth, and in other particulars pointed out under the latter species.

Measurements of skulls.—Average of 4 adult males from New York State: Basilar length of Hensel, 254; postpalatal length, 118; basion to plane of front m^2 , 168; zygomatic breadth, 184; ratio of zygomatic breadth to basilar length, 75.

***Ursus luteolus* Griffith. Louisiana Bear.**

Ursus luteolus Griffith, Carnivorous Animals, pp. 236-237 (with col. pl.), 1821.

Merriam: Proc. Biol. Soc. Wash., VIII, pp. 147-152, Dec. 29, 1893.

Type locality.—Louisiana.

Geographic distribution.—Louisiana and Texas and probably other parts of Austroriparian Zone.

Characters.—Size large; skull long and flat; fronto-parietal region depressed; profile of top of skull (including crest) nearly a straight line; sagittal crest long and high, about half the length of upper side of skull in old age. Contrasted with old skulls of male Black bears from the Adirondacks, in northern New York, the three old male skulls from Mer Rouge, Louisiana, differ uniformly in the following particulars: They are longer and flatter; the occipito-sphenoid length is greater; the distance from foramen magnum to plane of front of last upper molar is greater; the ratio of zygomatic breadth to basilar length is less (average, 64.6 instead of 75 percent); the ratio of postpalatal length to occipito-sphenoid length is considerably greater.

The molars are very large, much larger than in any known species of the Black bear group. The last upper molar in particular is notable for its great breadth as well as length, averaging 29 to 30 mm. in length and 17 mm. in breadth in three old males from Prairie Mer Rouge.

Measurements of skulls.—Skull of type specimen (No. 1155, U. S. Nat. Mus., from Mer Rouge, La.): Greatest length (gnathion to end of occipital crest), 326; basal length (gnathion to basion), 292; basilar length of Hensel, 288; zygomatic breadth, 187; occipito-sphenoid length, 89; post-palatal length, 134; basion to plane of front of last upper molar, 193; interorbital breadth, 68; distance between postorbital processes, 97; occipito-nasal length, 276. Average of three adult males from type locality: Basilar length of Hensel, 280; postpalatal length, 131; basion to plane of front of m², 185; zygomatic breadth, 188. Ratio of zygomatic breadth to basilar length, 64.6.

Remarks.—The Louisiana bear resembles the Florida bear in the elongation and narrowness of the skull, but differs in having the frontal region remarkably flattened instead of highly arched, and in having the upper molars much larger.

In my original article on '*The Yellow Bear of Louisiana*'* I made the mistake of referring to this species a bear described by Mr. Arthur Erwin Brown and considered by him to be the *Ursus cinnamomeus* of Audubon and Bachman,† which latter animal is commonly regarded as a color phase of the Black bear. Mr. Brown's bear died in the Philadelphia Zoölogical Garden. It was procured in November, 1891, "at some point on the Union Pacific railway, in Wyoming," "by the late James E. Cooper, a well-known showman of Philadelphia." Mr. Brown afterward kindly sent me the skull for examination (No. 3380 ♂ old, Mus. Phila. Acad. Sci.). To my surprise, it does not belong to either of the two groups of bears inhabiting the United States—the Blacks and Grizzlies—but, in my judgment, is the Carrion bear of the Ural Mountains of Russia, described by Eversmann in 1840 under the name *Ursus cadaverinus*.‡ Although it has short fore claws like the Black bears, as pointed out by Mr. Brown, it does not belong to the subgenus *Euarcos*. The first lower molar is much worn, but instead of the open space or 'step' of the Black bears it shows on both sides the worn-down base of the connecting cusp or tubercle of the large bears, and the last upper molar has the enormous, broadly rounded heel of *Ursus arctos*

* Proc. Biol. Soc. Washington, VIII, 147-152, Dec., 1893.

† Forest and Stream, Dec. 16, 1893, 518-519. Also a subsequent paper in Proc. Acad. Nat. Sci. Phila., June, 1894, 119-129.

‡ Bull. Soc. Imp. Nat. Moscow, 1840, 11-13.

and its allies. The last upper premolar is exceedingly narrow and the postero-internal cusp is greatly reduced, in which respects it differs from all American bears except the Polar bear, which belongs to another genus.

The peculiar cranial characters of Mr. Brown's bear are very well covered by Eversmann's original description. Eversmann states that the skull is thickly built, comparatively short and high, the frontal is arched above the orbits and then slopes abruptly and forms a step with the nasals, which curve up to meet it. The elliptical orbits stand more vertical than in the other species. Eversmann states further that even in the living animal the species can be distinguished. In the Carrion bear the head is short and the prominent forehead does not slope gradually down to the snout, but with an abrupt step. The skin is generally brown, and is lighter on the neck and shoulders, where it is soiled yellow or yellowish brown.

In view of the facts that the early history of Mr. Brown's bear is involved in hopeless obscurity; that the animal differs radically and irreconcilably from all known American species and seems to agree perfectly with the Carrion bear of western Russia, and that numbers of living bears are shipped from western Russia to America for exhibition purposes, it seems more reasonable to regard the specimen in question as an exotic rather than as an American species, of which, up to the year 1896, only a single specimen has come to the notice of naturalists.

***Ursus floridanus* sp. nov.** Everglade Bear.

Type from Key Biscayne, Florida. Skull No. 3484, ♂ old, U. S. National Museum.

Geographic distribution.—The everglades and probably other parts of peninsular Florida.

Characters.—(Type specimen.) Skull very long, high, and narrow; frontal region remarkably elevated, highest immediately behind post-orbital processes (more than 100 mm. above hinder part of palate); brain case very long and narrow; interpterygoid fossa very long (71 mm. in type specimen); basisphenoid and palate deeply excavated, the latter strongly arched both antero-posteriorly and transversely.

Measurements of type skull (♂ old).—Basal length (basion to gnathion), 282; basilar length of Hensel (basion to middle incisor), 277; zygomatic breadth, 190; occipito-sphenoid length (basioccipital + basisphenoid), 91; basion to hinder edge of palate, 133; basion to plane of front of last molar, 186; interorbital breadth, 68; distance across postorbital processes, 109; occipito-nasal length, 290; greatest length of skull, 330; ratio of zygomatic breadth to basilar length, 68.5.

Remarks.—The bear of the everglades seems to differ specifically from both the common Black bear of the eastern United States (*Ursus americanus* Pallas) and the Louisiana bear (*Ursus luteolus* Griffith). I have not had an opportunity to compare the skin of the Florida bear with that of other species, but have examined several skulls. The cranial characters are marked, particularly in the adult male. The skull resembles that of the Louisiana bear in great length and narrowness, but differs in the form of the palate and vault of the cranium. The frontal region is highly arched, while that of the Louisiana bear is flattened, and the molar teeth are much smaller than in *luteolus*.

***Ursus emmonsii* Dall.** Glacier Bear.

Ursus americanus var. *emmonsii* Dall, Science, NS., II, No. 30, p. 87, July 26, 1895.

Type locality.—St. Elias Alps, Alaska (near Yakutat Bay).

Geographic distribution.—Glacier region of the St. Elias Alps and thence southeasterly along the mountains to the neighborhood of Juneau; limits of range unknown.

Characters.—Size small; claws short and strongly curved; skull not seen; pelage peculiar: "The general color of the animal resembles that of a Silver fox. The fur is not very long, but remarkably soft and with a rich under fur of a bluish black shade, numbers of the longer hairs being white or having the distal half white and the basal part slaty. The dorsal line from the tip of the nose to the rump, the back of the very short ears, and the outer faces of the limbs are jet black. Numerous long white hairs issue from the ears; black and silver is the prevalent pelage of the sides, neck and rump; the under surface of the belly and the sinuses behind the limbs are grayish white, or even nearly pure white, I am told, in some cases. The sides of the muzzle and the lower anterior part of the cheeks are of a bright tan color, a character I have not seen in any other American bear; and this character is said to be invariable. There is no tint of brown elsewhere in the pelage. There is no tail visible on the pelts. The claws are small, very much curved, sharp, black above and lighter below; the animal evidently can climb trees, which the Brown bear cannot do."*

* Dall: Science, July 26, 1895, p. 87.

EXPLANATION OF PLATES.

PLATE IV.

- Fig. 1. *Ursus sitkensis* ♂ ad. Mainland north of Sitka. Coll. C. H. Townsend.
2. *Ursus middendorffi* ♂ yg. ad. Kadiak Island, Alaska. No. 67401, U. S. Nat. Mus.
3. *Ursus middendorffi* ♂ old. Kadiak Island, Alaska. No. 55493, U. S. Nat. Mus.
4. *Ursus horribilis* ♂ ad. Bighorn Mountains, Wyoming. No. 67391, U. S. Nat. Mus.
5. *Ursus horriæus* ♂ old. Coppermines, New Mexico. No. 990, U. S. Nat. Mus.
6. *Ursus richardsoni* ♂ old. Anderson River. No. 6255, U. S. Nat. Mus.

PLATE V.

- Fig. 1. *Ursus dalli* ♂ old. Yakutat, Alaska. No. 75048, U. S. Nat. Mus.
2. *Ursus middendorffi* ♂ yg. ad. Kadiak Island, Alaska. No. 67401, U. S. Nat. Mus.
3. *Ursus sitkensis* ♂ ad. Sitka, Alaska. No. 6543, Merriam Coll.
4. *Ursus horribilis* ♂ ad. Bighorn Mountains, Wyoming. No. 67391, U. S. Nat. Mus.
5. *Ursus richardsoni* ♂ old. Anderson River. No. 6255, U. S. Nat. Mus.
6. *Ursus horriæus* ♂ old. Coppermines, New Mexico. No. 990, U. S. Nat. Mus.

PLATE VI.

- Fig. 1. *Ursus horribilis* ♂ ad. Bighorn Mountains, Wyoming. No. 67391, U. S. Nat. Mus.
2. *Ursus middendorffi* ♂ old. Kadiak Island, Alaska. No. 55493, U. S. Nat. Mus.
3. *Ursus richardsoni* ♂ ad. Anderson River. No. 6255, U. S. Nat. Mus.
4. *Ursus horriæus* ♂ old. Coppermines, New Mexico. No. 990, U. S. Nat. Mus.
5. *Ursus dalli* ♂ old. Yakutat, Alaska. No. 75048, U. S. Nat. Mus.

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